

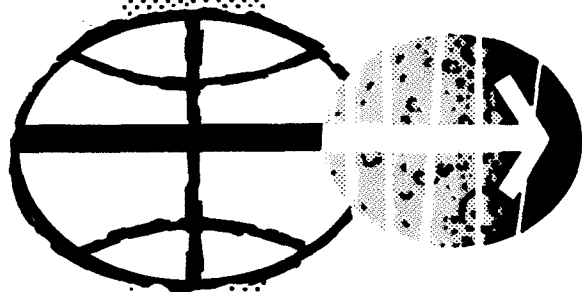


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

APOLLO EXPERIMENTS PROGRAM REVIEW

LUNAR SURFACE EXPERIMENTS

FEBRUARY 17, 1972



MANNED SPACECRAFT CENTER HOUSTON, TEXAS

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AGENDA
APOLLO EXPERIMENTS PROGRAM REVIEW
FEBRUARY 17 - 18, 1972
MSC, BLDG. 2, ROOM 602

THURSDAY, FEBRUARY 17, 1972 LUNAR SURFACE EXPERIMENTS

9:30 - 10:00	A. MISSION ANOMALIES	J. LOBB
10:00 - 11:30	B. APOLLO 16, 17 HARDWARE STATUS	D. GERKE
12:00 - 3:00	C. APOLLO 16, 17 PRINCIPAL INVESTIGATOR STATUS	PI's
3:00 - 3:30	D. PROGRAM COST STATUS	E. TRIBBLE
3:30 - 3:45	E. WEIGHT SUMMARY	R. MORTON
3:45 - 4:00	F. PREVIOUS ACTION ITEMS	D. LOCKARD

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LUNAR SURFACE EXPERIMENTS

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A. MISSION ANOMALIES

J. LOBB

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APOLLO 15 LUNAR SURFACE EQUIPMENT PROBLEMS CLOSED SINCE NOVEMBER 1971 REVIEW

<u>PROBLEM</u>	<u>REMARKS</u>
LSM Y AXIS HEAD NOT FLIPPING	MOTOR DRAWS NORMAL POWER. MECHANICAL PROBLEM
LSM Y AXIS DATA LOSS AT LUNAR NOON	DATA OFF SCALE FLATPACK COMPONENT / CONNECTION INTERMITTENT WITH TEMPERATURE
SWS INTERMITTENT LOSS OF TOP TWO LEVELS OF CUP MODULATION VOLTAGES	INTERMITTENT IN CIRCUIT FOR PRE-FLIGHT AMBIENT TESTS
RETRACTABLE TETHER SPRING JAMMED	PROCEDURES EMPHASIS

APOLLO 15 PARTICLES AND FIELDS SUBSATELLITE

STATUS

1. PARTICLES EXPERIMENT: LOSING ABOUT 50 PERCENT
2. MAGNETOMETER: LOSING ABOUT 90 PERCENT
3. TRANSPONDER: NO LOSS

ACTION

1. PROGRAM TO PROCESS DATA (CHANGE FROM LOST SYNC FRAME)
2. CONTINUE CIRCUIT AND DATA ANALYSIS

APOLLO 15 PARTICLES AND FIELDS SUBSATELLITE (CONT)

	<u>MEASUREMENTS</u>	
	<u>LOST</u>	<u>VALID</u>
SCIENCE INSTRUMENTATION	11	24
DATA, COMMUNICATION, ELECTRIC POWER, SUN SENSOR	10	16

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B. APOLLO 16, 17 HARDWARE STATUS

D. GERKE

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APOLLO 16 SCIENCE HARDWARE

● ACCOMPLISHMENTS

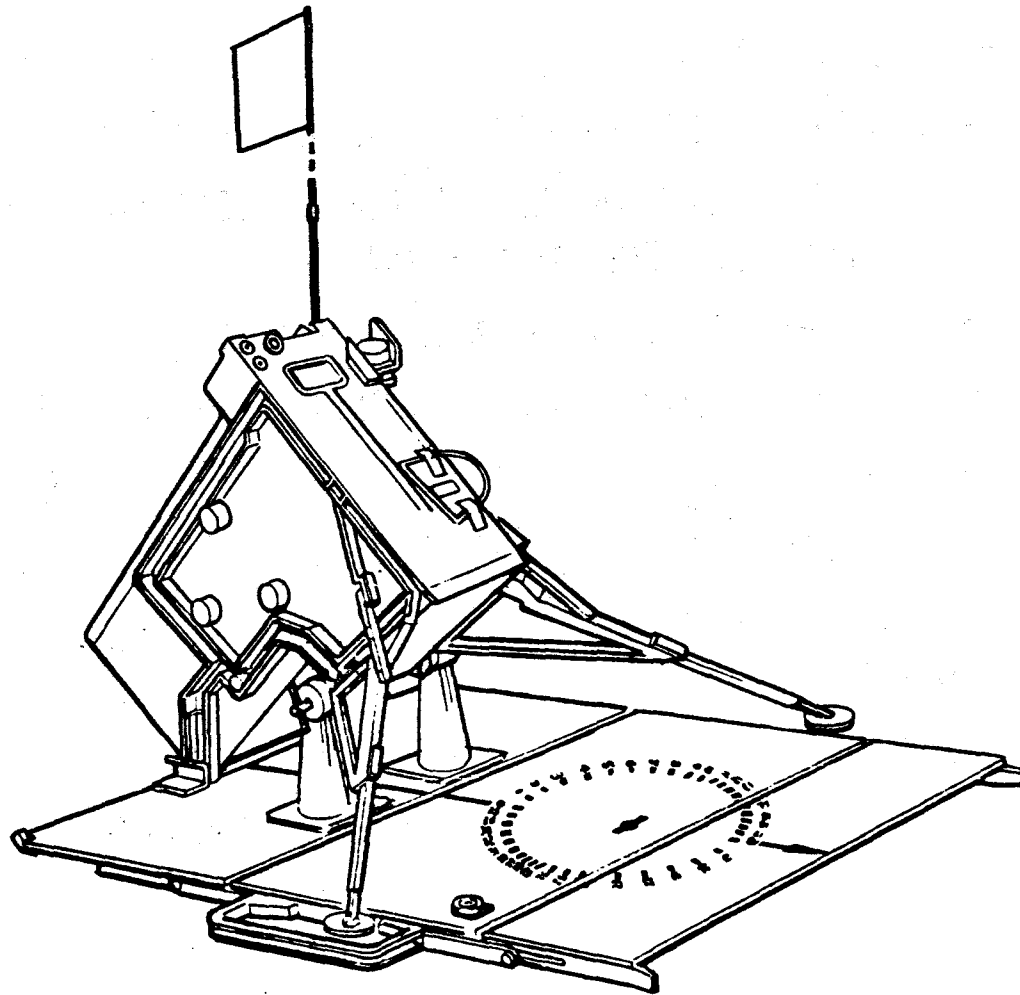
- ARRAY D ALSEP AT KSC - COMPLETED CF², SIT
- ASE PALLET LOCKING MECHANISM REDESIGNED - FLIGHT UNIT TO BE DELIVERED FEBRUARY 23, 1972
- FIT CHECKED RTG AND CASK TO CAPSULE
- ACCEPTED FLIGHT DRILL - TO BE DELIVERED FEBRUARY 21, 1972
- TOOL, SRC's, LPM, SRP, LSCR, SWC - DELIVERED TO KSC

● NOTE: EQUIPMENT NOT YET DELIVERED TO KSC - DRILL, FAR UV CAMERA, LUNAR SOIL SAMPLING TOOL, ASE PALLET, AND PROTECTIVE SAMPLE BAGS

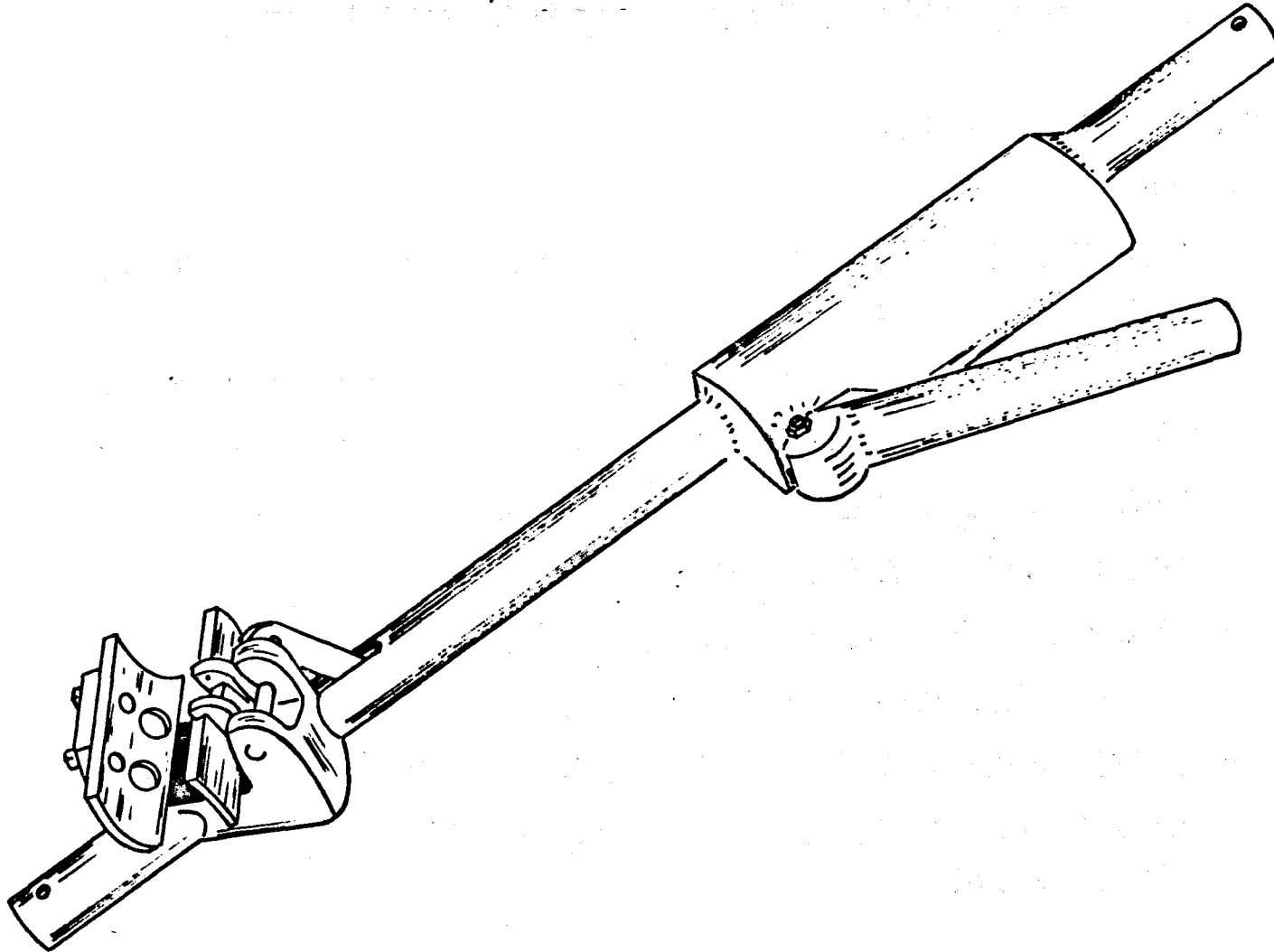
● PROBLEM

- FAR UV CAMERA - HV POWER SUPPLY FAILURES
 - HUMIDITY PROTECTION BAG DEVELOPMENT

ASE MORTAR PACKAGE DEPLOYED CONFIGURATION



ALSD CORE/BORE STEM WRENCH



APOLLO 16 SCIENCE HARDWARE (CONT)

- REMAINING EFFORT AT KSC
 - ALSEP
 - RESTOW SP II - ASE PALLET AND SP II SUBPALLET WITH ALSEP TOOLS - FEBRUARY 25, 1972
 - FIT CHECK UHT's WITH CONTACT SOIL SAMPLES - FEBRUARY 28, 1972
 - FIT CHECK HFE PROBES TO FLIGHT BORE STEMS - FEBRUARY 24, 1972
 - DEGAUSS SP I AND II - FEBRUARY 28, 1972
 - INSTALL GLA's - MARCH 2, 1972
 - FINAL STOW SP I AND II - MARCH 9, 1972
 - PREPARE FOR FLIGHT - MARCH 13, 1972
 - INSTALL ALSEP ON SPACECRAFT - MARCH 15, 1972
 - INSTALL CASK (MARCH 20, 1972) AND FUEL CAPSULE ON SPACECRAFT - APRIL 15, 1972

APOLLO 16 SCIENCE HARDWARE (CONT)

- LUNAR SOIL SAMPLING TOOL
 - DELIVERY TO KSC - MARCH 28, 1972
 - INSTALL ON SPACECRAFT - APRIL 10, 1972
- COSMIC RAY
 - ADD TEMPERATURE LABELS AND INSTALL ON SPACECRAFT - APRIL 15, 1972
- PROTECTIVE SAMPLE BAGS
 - DELIVERY TO KSC - MARCH 28, 1972
 - INSTALL ON SPACECRAFT - APRIL 10, 1972
- FAR UV
 - DELIVERY TO KSC - APRIL 4, 1972
 - INSTALL ON SPACECRAFT - APRIL 9, 1972
- OTHER HARDWARE
 - BENCH CHECK - FEBRUARY 29, 1972 AND INSTALL ON SPACECRAFT -
APRIL 10, 1972

UV CAMERA

● STATUS

- QUAL CAMERA SYSTEM
 - POWER SUPPLY SN 6201 (RTV 11) INTEGRATED TO CAMERA
 - ATP IN PROGRESS AT AETL
- FLIGHT CAMERA SYSTEM
 - NRL THERMAL VACUUM CHECKOUT COMPLETE
 - POWER SUPPLY IN FINAL ASSEMBLY
- BACK-UP POWER SUPPLY (OIL FILLED)
 - THREE POWER SUPPLIES IN FINAL ASSEMBLY AT NRL

● PROBLEMS

- FAILURE OF HIGH-VOLTAGE POWER SUPPLY
- HUMIDITY PROTECTION BAG

● PROJECTIONS

- | | | |
|--------------------------|---|-------------------|
| ● QTRR | - | FEBRUARY 15, 1972 |
| ● FTRR | - | FEBRUARY 16, 1972 |
| ● QAR | - | MARCH 1, 1972 |
| ● CARR | - | APRIL 3, 1972 |
| ● DELIVER FLIGHT SYSTEM | - | APRIL 4, 1972 |
| ● DELIVER BACK-UP SYSTEM | - | APRIL 11, 1972 |

UV CAMERA POWER SUPPLY PLANS

- **CONTINUE PARALLEL DEVELOPMENT OF OIL FILLED AND POTTED SUPPLIES**
- **QUALIFY CAMERA WITH POTTED SUPPLY**
- **PERFORM FLIGHT UNIT ACCEPTANCE TESTS WITH POTTED SUPPLY**
- **TEST PROTOTYPE CAMERA WITH OIL FILLED SUPPLY**
- **PERFORM DEVELOPMENT TESTS OF SUPPLIES AT MSC**
- **PURCHASE ADDITIONAL SUPPLIES**
- **SELECT FLIGHT UNIT IN EARLY MARCH**

UV CAMERA HUMIDITY PROTECTION BAG

- **QUAL BAG AND PALLET IN QUAL TEST - EXPECTED COMPLETION ON FEBRUARY 18, 1972**
- **FLIGHT UNIT IN FABRICATION**
- **INTERFACE FOR HUMIDITY METER INCORPORATED**
- **BACKUP BAG IN TEST**

APOLLO 17 ALSEP

● ACCOMPLISHMENTS

- ALSEP DVT TESTS INCLUDING EXPERIMENTS COMPLETED SUCCESSFULLY
- ALSEP/MSFN COMPATIBILITY TESTS COMPLETED SUCCESSFULLY
- ALSEP QUAL C/S VERIFICATION TESTS COMPLETED SUCCESSFULLY
- QUAL LEAM AND HFE EXPERIMENTS INTEGRATED WITH QUAL C/S
- ALSEP FLIGHT C/S MECHANICAL INTEGRATION STARTED
- ARRAY E ALSEP TRAINER DELIVERED
- QUAL AND FLIGHT SP II HARDWARE COMPLETE (EXCEPT LEAM)

● PROBLEMS

- TEXAS INSTRUMENTS 54L SERIES INTEGRATED CIRCUITS CONTAMINATION
- DESIGN CHANGES REQUIRED TO COMMAND DECODER AND DATA PROCESSOR TO ELIMINATE SINGLE-POINT FAILURES AND ELIMINATE SPURIOUS COMMAND EXECUTION WHEN UPLINK SIGNAL STRENGTH AT RECEIVER THRESHOLD
 - STATUS: DESIGN MODS COMPLETE, 4 NEW PC BOARDS PROCURED, WORKAROUND IMPLEMENTED TO CHANGE OUT PRIOR TO QTRR AND/OR FTRR - WITHOUT IMPACT ON DELIVERY
- LMS DUAL MODE MODIFICATION - IMPACT APPROXIMATELY 2-WEEK DELAY ON FLIGHT

TI 54L SERIES INTEGRATED CIRCUIT CONTAMINATION

- ALL ALSEP 54L's (BXA AND SUBCONTRACTORS) SUBJECTED TO AUTONETICS SCREENING TEST (2196 TESTED - 28 FAILED)
- ALL PARTS PASSING SCREENING TEST SUBJECTED TO LEAK TEST (15 FAILED)
- BXA REMOVED 535 OF SCREENED PARTS FROM BONDED STORES FOR USE AND 5 HAVE FAILED. 2 FAILED WITH INTERNAL SHORTS - SENT TO AUTONETICS FOR ANALYSIS
- 10 PARTS THAT PASSED SCREENING TEST (VERIFIED GOOD) OPENED AT AUTONETICS - 2 FOUND TO CONTAIN CONTAMINATION
- ALSEP ARRAY E DESIGN REVIEWED IN DETAIL TO DETERMINE USE AND CRITICALITY OF ALL 54L's USED. CRITICALITY NUMBERS: 1 - LOSS OF SYSTEM, 2 - LOSS OF EXPERIMENT, 3 - DATA LOSS IN C/S DEGRADING MORE THAN ONE EXPERIMENT, 4 - LOSS OF REDUNDANCY, 5 - PARTIAL SCIENCE DATA LOSS FOR AN EXPERIMENT, 6 - ENGINEERING DATA LOSS
- 6 PARTS IN COMMAND DECODER (4) AND DATA PROCESSOR (2) DETERMINED TO BE CRITICALITY 1 - (SINGLE-POINT FAILURES)
- RESULTS OF INVESTIGATION
 - REPLACE ALL 54L's IN FLIGHT C/S WITH SCREENED PARTS
 - 54L's IN OTHER HARDWARE REPLACED WHERE POSSIBLE (SEE SUMMARY CHART)
 - MAKE DESIGN MODIFICATION TO ELIMINATE THE SINGLE-POINT FAILURES
- IMPACT
 - 5-WEEKS DELAY IN DELIVERY FLIGHT SYSTEM
 - \$1.5 MILLION COST INCREASE

54L USAGE/REPLACEMENT SUMMARY

ITEM	CRITICALITY 1		CRITICALITY 2		CRITICALITY 3		CRITICALITY 4		CRITICALITY 5		CRITICALITY 6	
	PARTS	% REPLACED	PARTS	% REPLACED	PARTS	% REPLACED	PARTS	% REPLACED	PARTS	% REPLACED	PARTS	% REPLACED
LSG	0	-	106	100%	0	-	0	-	6	100%	0	-
LMS	0	-	48	46%	0	-	0	-	83	93%	34	33%
LEAM	0	-	71	95%	0	-	0	-	21	0	0	-
LSPE	0	-	100	0	0	-	0	-	37	0	30	0
C/S*	0	-	18	100%	50	100%	351	99%	0	-	0	-
TOTAL	0	-	343	63%	50	100%	351	99%	147	56%	64	17%

* 2 PARTS IN TRANSMITTER NOT SCREENED (BUILT AFTER LINE CLEANED UP).

PLANNED ARRAY E 54L FLIGHT PART UTILIZATION
 SHOWING PERCENT OF VIBRATION/HERMETIC SCREENED PARTS

Item	Board #	Crit 1 Parts %	Crit 2 Parts %	Crit 3 Parts %	Crit 4 Parts %	Crit 5 Parts %	Crit 6 Parts %
LSG	*BD#1	0 -	31. 100	0 -	0 -	0 -	0 -
	*BD#2	0 -	13. 100	0 -	0 -	4. 100	0 -
	*BD#3	0 -	4. 100	0 -	0 -	0 -	0 -
	*BD#4	0 -	23. 100	0 -	0 -	0 -	0 -
	*BD#6	0 -	4. 100	0 -	0 -	0 -	0 -
	*BD#8	0 -	1. 100	0 -	0 -	2. 100	0 -
	*14A1-A2	0 -	30. 100	0 -	0 -	0 -	0 -
	*Subtotal	0 -	106. 100	0 -	0 -	6. 100	0 -
LMS	*2347550	0 -	0 -	0 -	0 -	75. 100	0 -
	*2347540	0 -	21. 100	0 -	0 -	2. 100	11. 100
	*2347555	0 -	1. 100	0 -	0 -	0 -	22. 0
	151-660(UTD)	0 -	0 -	0 -	0 -	4. 0	1. 0
	151-686(UTD)	0 -	26. 0	0 -	0 -	2. 0	0 -
	Subtotal	0 -	48. 46	0 -	0 -	83. 93	34. 33
LEAM	2 Dual Sensors	0 -	0 -	0 -	0 -	16. 0	0 -
	Single Sensor	0 -	0 -	0 -	0 -	5. 0	0 -
	BD#1 (Matrix)	0 -	2. 0	0 -	0 -	0 0	0 -
	BD#2 (Matrix)	0 -	1. 0	0 -	0 -	0 0	0 -
	*18 Layer Logic	0 -	67. 100	0 -	0 -	0 -	0 -
	Power Supply	0 -	1. 0	0 -	0 -	0 -	0 -
	Subtotal	0 -	71. 95	0 -	0 -	21. 0	0 -
LSPE	2347815(BD#1)	0 -	46. 0	0 -	0 -	0 -	0 -
	2347825(BD#2)	0 -	22. 0	0 -	0 -	0 -	0 -
	2347835(BD#3)	0 -	23. 0	0 -	0 -	0 -	30. 0
	8 EPA's	0 -	0 -	0 -	0 -	32. 0	0 -
	2346710(MUX)	0 -	0 -	0 -	0 -	4. 0	0 -
	2346720(A/D-A)	0 -	2. 0	0 -	0 -	0 -	0 -
	2346725(A/D-D)	0 -	7. 0	0 -	0 -	1. 0	0 -
	Subtotal	0 -	100. 0	0 -	0 -	37. 0	30. 0
CMD, DCDR.	*2367652(Demod)	0 -	0 -	0 -	22. 100	0 -	0 -
	*2367625(Decode)	0 -	0 -	50. 100	42. 100	0 -	0 -
	*2370075(Contrl)	0 -	3 100	0 -	56. 100	0 -	0 -
	*2367615(Seq)	0 -	6. 100	0 -	33. 100	0 -	0 -
	*Subtotal	0 -	8. 100	50. 100	153. 100	0 -	0 -
Data Proc. (incl. 90 Chan. MUX)	*2349445(A/D)	0 -	0 -	0 -	24. 100	0 -	0 -
	*2349455(INTFC)	0 -	10. 100	0 -	0 -	0 -	0 -
	*2349450(T/CW)	0 -	0 -	0 -	90. 100	0 -	0 -
	*2349415(Demand)	0 -	0 -	0 -	80. 100	0 -	0 -
	*Subtotal	0 -	10. 100	0 -	194. 100	0 -	0 -
PCU	*2370060	0 -	0 -	0 -	2. 100	0 -	0 -
XMITTER	SYNTHESIZER	0 -	0 -	0 -	2 0	0 -	0 -
ALSEP Syst. (ARRAY E)	TOTAL	0 -	343 62%	50 100%	351 99%	147 44%	64 17%

*Indicates item will contain 100% screened parts for Flight.

**Indicates item will be reworked to use screened parts in most critical applications for Flight.

Note 1 - Criticality numbers: 1 = Loss of system, 2 = Loss of experiment, 3 = Data loss in C/S degrading more than one experiment, 4 = Loss of redundancy, 5 = Partial science data loss for an individual experiment, 6 = Engineering data loss.

Note 2 - The percentage of screened parts in the system for criticality 2 would increase from 62% to 71% if the system uses all screened parts except for LSPE.

Note 3 - In the event of part failure, vibration screened parts will be used for replacement on Flight (and Qual) regardless of this plan.

APOLLO 17 ALSEP (CONT)

● DELIVERY OR TEST COMPLETE

- QUAL MODEL AVAILABLE SP II - MARCH 1, 1972
- SP I - APRIL 1, 1972
- QUAL TEST COMPLETE - JULY 20, 1972
- FLIGHT MODEL FTRR - MAY 15, 1972
- FLIGHT DELIVERY (INCLUDING
LEAM AND LMS CALIBRATION) - SEPTEMBER 11, 1972

LUNAR SURFACE GRAVIMETER

● STATUS

- ALL 54L FLATPACKS REPLACED
- QUAL AND FLIGHT ELECTRONICS PACKAGES ASSEMBLED, IN FINAL TEST
- QUAL AND FLIGHT HEATER BOX ASSEMBLIES WITH SENSOR ASSEMBLED, IN FINAL TEST

● PROBLEMS

- RESONANCE AT 22 Hz

● PROJECTIONS

- COMPLETE ALSEP SYSTEM INTEGRATION OF QUAL ELECTRONICS, LATE FEBRUARY
- DELIVER FLIGHT ELECTRONICS AND HEATER BOX TO ADL FOR FINAL INSTRUMENT ASSEMBLY, LATE FEBRUARY
- DELIVER QUAL ELECTRONICS AND HEATER BOX TO ADL FOR FINAL INSTRUMENT ASSEMBLY, EARLY MARCH

LUNAR EJECTION AND METEORITES EXPERIMENT

- STATUS
 - QUAL UNIT IN INSTRUMENT LEVEL ACCEPTANCE
 - FLIGHT UNIT IN BUILD-UP AND TEST
- PROBLEMS
 - FLIGHT UNIT LOGIC BOARD REQUIRES ANOTHER 2-3 WEEKS FOR BUILD-UP
- PROJECTIONS
 - CONTINUE QUALIFICATION TESTING
 - FLIGHT UNIT TO FINISH EXPERIMENT TESTS LATTER MARCH
 - FLIGHT UNIT DELIVERY TO SYSTEM END OF MARCH

SEISMIC PROFILING EXPERIMENT

● STATUS

- FOUR PROTOTYPE EXPLOSIVE PACKAGES SUCCESSFULLY DETONATED AT WSTF
- QUAL GEOPHONES AND CENTRAL ELECTRONICS COMPLETE, EXPLOSIVE PACKAGES IN ASSEMBLY
- FLIGHT UNIT IN FINAL ASSEMBLY
- TIMERS BUILT TO REVISED PROCEDURES PERFORMING SATISFACTORILY TO DATE

● PROBLEMS

- NONE

● PROJECTIONS

- COMPLETE REMAINING (16) PROTO EP DETONATIONS BY END OF MARCH
- DELIVER QUAL GEOPHONES AND CENTRAL ELECTRONICS TO ALSEP SYSTEM IN LATE FEBRUARY
- COMPLETE QUAL EP DETONATIONS BY END OF JUNE
- DELIVER FLIGHT GEOPHONES AND CENTRAL ELECTRONICS TO ALSEP SYSTEM IN EARLY MARCH
- COMPLETE ACCEPTANCE TESTING OF FLIGHT EP's BY LATE MAY

HEAT FLOW EXPERIMENT/APOLLO LUNAR SURFACE DRILL

● STATUS

- HFE FLIGHT UNIT PIA COMPLETE
- ARRAY E SYSTEM QUAL WITH HFE IN PROCESS
- ALSD FLIGHT UNIT 4 ASSEMBLY IN PROCESS
- NEW ALSD DESIGN APPROVED BY CREW FEBRUARY 10, 1972

● PROBLEMS

- NONE KNOWN

● PROJECTIONS

- PERFORM MODIFICATION ON HFE PER CCP NO. 352 - (RADIATION SHIELDS)
- INTEGRATE HFE FLIGHT UNIT WITH SYSTEM
- ALSD FLIGHT UNIT CARR - MARCH 7, 1972
- DELIVER ALSD FLIGHT UNIT TO KSC - MARCH 10, 1972

LUNAR MASS SPECTROMETER

● STATUS

- QUAL UNIT IN INSTRUMENT LEVEL ACCEPTANCE
- FLIGHT UNIT IN FINAL ASSEMBLY

● PROBLEMS

- OPEN CIRCUIT IN INPUT POWER DURING OPERATING VIBRATION OF QUAL UNIT

● PROJECTIONS

- CONTINUE QUALIFICATION TESTING ON QUAL UNIT
- DISASSEMBLE FLIGHT UNIT AND PROCEED WITH MODIFICATION OF MULTIPLE ENERGY MODES

SAMPLE RETURN CONTAINERS FOR APOLLO 17

- **STATUS**

- **UNION CARBIDE PREPARING TO PACK UNITS FEBRUARY 15 AND
BAG IN A NITROGEN ATMOSPHERE FOR EXTENDED BONDED
STORAGE AT MSC**

- **PROBLEMS**

- **NONE KNOWN**

- **PROJECTIONS**

- **INITIATION OF LRL PREPARATIONS SCHEDULED FOR OCTOBER 2**

LUNAR GEOLOGICAL EQUIPMENT

- STATUS

- TOOLS TO THE APOLLO 16 CONFIGURATION AND COMPLEMENT EXCEPT THE GNOMON ARE AVAILABLE

- PROBLEMS

- NONE KNOWN

- PROJECTIONS

- GNOMON TO BE COLOR CALIBRATED OCTOBER 30, 1972

SURFACE ELECTRICAL PROPERTIES

● STATUS

- ENGINEERING VIBRATION TEST COMPLETE
- PROTO MODEL IN RETROFIT

● PROBLEMS

- NO TECHNICAL PROBLEMS

● PROJECTIONS

- | | | |
|-------------------------------|---|----------------|
| ● DELTA CDR | - | MARCH 30, 1972 |
| ● QUAL TRANSMITTER DELIVERY | - | MARCH 2, 1972 |
| ● QUAL RECEIVER DELIVERY | - | JUNE 15, 1972 |
| ● FLIGHT TRANSMITTER DELIVERY | - | JULY 14, 1972 |
| ● FLIGHT RECEIVER DELIVERY | - | JULY 14, 1972 |

TRAVERSE GRAVIMETER

● STATUS

- THERMAL MODEL TEST COMPLETE
- MECHANICAL MODEL TESTING NEAR COMPLETION
- ENGINEERING MODEL IN TEST
- PROTO AND QUAL MODELS IN FABRICATION

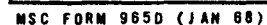
● PROBLEMS

- NO TECHNICAL PROBLEMS

● PROJECTIONS

- PROTO MODEL CARR - MARCH 15, 1972
- QTRR - MAY 8, 1972
- CARR - JULY 15, 1972

P.D. Gerke
P.D. GERKE MANAGER LSPO
STATUS RESPON
E.L. Tribble
E.L. TRIBBLE PROJECT OFFICE
SCHEDULE RESPONSES



J.H. LANGFORD EXPERIM. MGR.
1.1.1 STATUS RESPON.

STATUS RESPON.
E. Bob Stewart
E. BOB STEWART PROJ. OFFICER
SCHEDULE RESPON.

APOLLO 16 ALSEP

[illegible]

NO Number 7-271
J. B. THOMAS EXP. MGR.
STATUS RESPONSIBILITY
R. J. Bartosh
R. J. BARTOSH PROJ. OFFIC
SCHEDULE RESPONSIBILITY

MSC FORM 9650 (JAN 68)

M. L. Curtner II 11/16/77
M. CURTNER EXPERIM. MGR.
STATUS RESPNS.
Lynn A. York
LYNN A. YORK PROJ. OFFICER
SCHEDULE RESPNS.

STATUS, RESPON.
Lynn A. York
LYNN A. YORK PROJ. OFFICER
SCHEDULE RESPON.

MSC FORM 965D (JAN 68)

COSMIC RAY DETECTOR
S152

NAS 9-11468

CONTRACTOR: GENERAL ELECTRIC CORP.

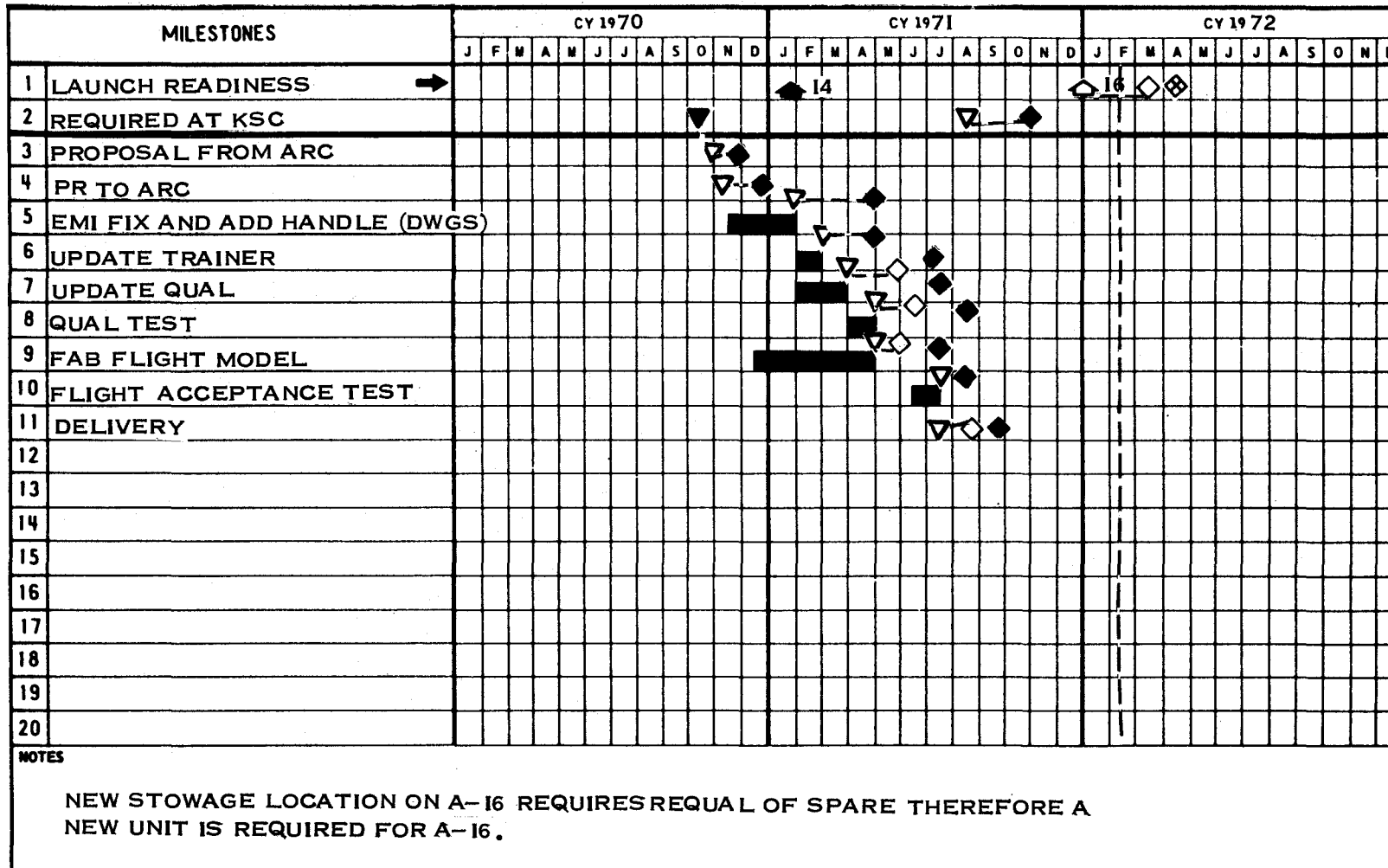
Milton F. Baker "1"
M. BAKER EXPERIM. MGR.
STATUS RESPON.
Gym A. Beck
LYNNA, YORK PROJ. OFFICER
SCHEDULE RESPON.

MILESTONES		CY 19 70												CY 19 71												CY 19 72											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1	LAUNCH READINESS →																																				
2	REQD KSC DEL																																				
3	PHASE I STUDY CONTRACT NAS9-11086																																				
4	DESIGN CONCEPT																																				
5	PHASE II HWD DEV & PROD																																				
6	PROCUREMENT CYCLE																																				
7	DESIGN ANALYSIS																																				
8	INTERFACE AGREEMENTS																																				
9	ENGINEERING DESIGN																																				
10	DEL. QUAL & FLT SCIENTIFIC MATERIALS																																				
11	QUAL FAB																																				
12	CDR																																				
13	QUAL TESTS																																				
14	FLIGHT UNIT FAB																																				
15	ACCEPTANCE TESTS																																				
16	DEL. FLT. UNIT																																				
17	REFURBISH QUAL UNIT (SPARE)																																				
18	ACCEPT. TESTS (SPARE)																																				
19	TRAINER FAB																																				
20																																					

NOTES

S-198 LUNAR HAND-HELD MAGNETOMETER AMES RESEARCH CENTER

J.B. Thomas 7-271
 J.B. THOMAS EXP. MGR.
 STATUS RESPONSIBILITY
R.J. Bartosh
 R.J. BARTOSH PROJ. OFFICER
 SCHEDULE RESPONSIBILITY



~~XXXXXXXXXXXXXXXXXXXX~~
WILLIE DUNAWAY EXPR. MGR.
STATUS RESPNS.
~~Lynn A. York~~
LYNN A. YORK PROJ. OFFICER
SCHEDULE RESPNS.



S059 LUNAR GEOLOGY INVESTIGATION HAND TOOLS

~~WILLIE DUNAWAY~~
WILLIE DUNAWAY EXPER. MGR.
STATUS RESPON.

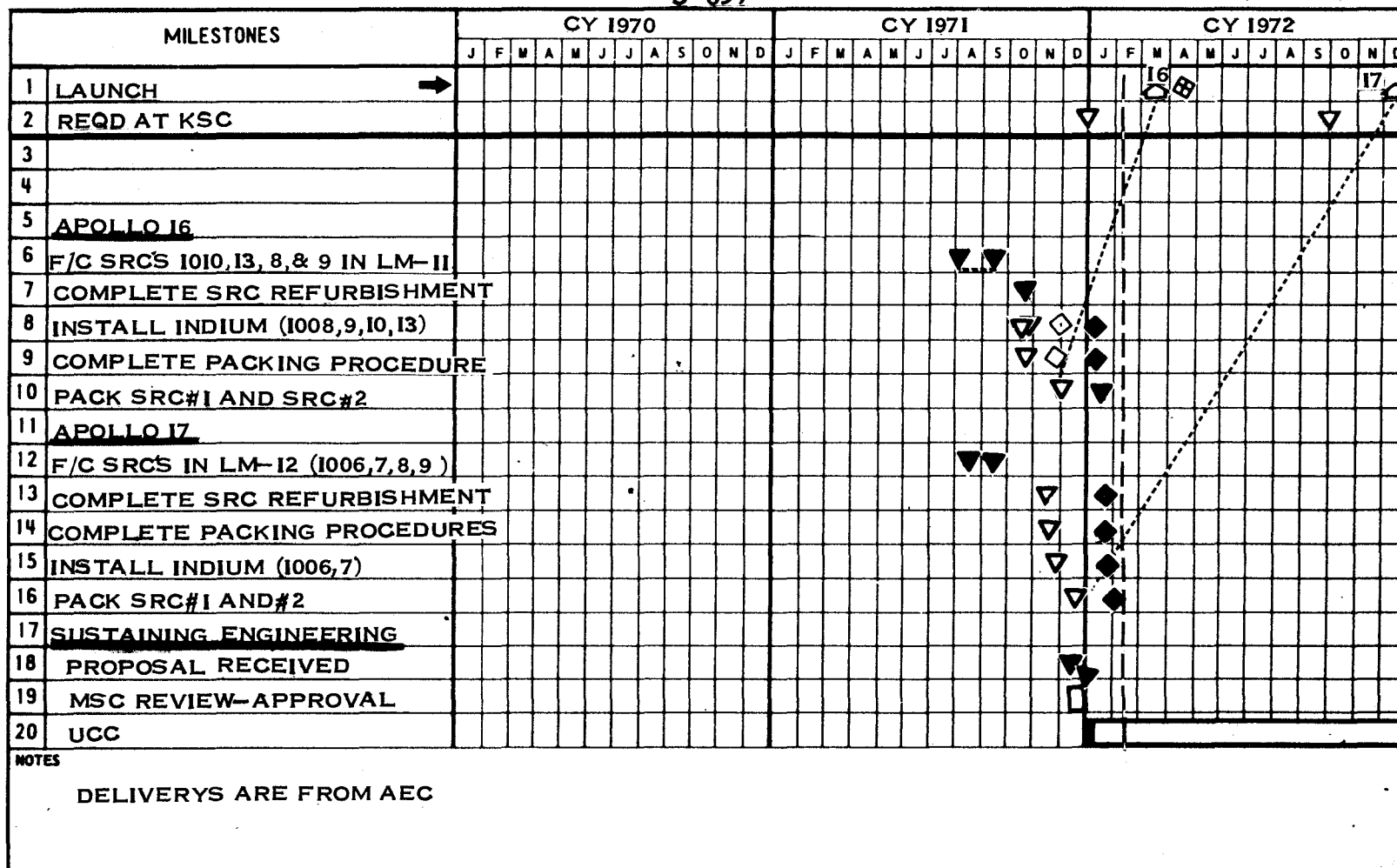
Lynn A. York
LYNN A. YORK PROJ. OFFICER
SCHEDULE RESPON.

MILESTONES		CY 1970												CY 1971												CY 1972														
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D			
1	LAUNCH READINESS →																																							
2	REQUIRED DELIVERY TO KSC																																							
3	HAMMER																																							
4																																								
5	TRENCHING TOOL																																							
6	TONGS (2) 22"																																							
7	TONGS (2) 32"																																							
8	EXTENSION HANDLE																																							
9	COLLECTION BAGS (3)																																							
10																																								
11																																								
12	SAMPLE SCALE A/S																																							
13	GNOMON																																							
14	ADJUSTABLE SMALL SCOOP																																							
15	TOOL CARRIER																																							
16																																								
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LUNAR GEOLOGY INVESTIGATION
SAMPLE RETURN CONTAINERS
ATOMIC ENERGY COMMISSION
S-059

W. M. Dunaway
W. M. DUNAWAY EXP. MGR
STATUS RESPONSIBILITY

Lynn A. York
LYNN A. YORK PROJ. OFFICER
SCHEDULE RESPONSIBILITY



11/17/79
J.B. Thomas
J.B. THOMAS EXPERIMENT MGR.
STATUS RESPON.
LYNN A. York
LYNN A. YORK PROJ. OFFICER
SCHEDULE RESPON.

LYNN A. YORK PROJ. OFFICER
SCHEDULE RESPNS.

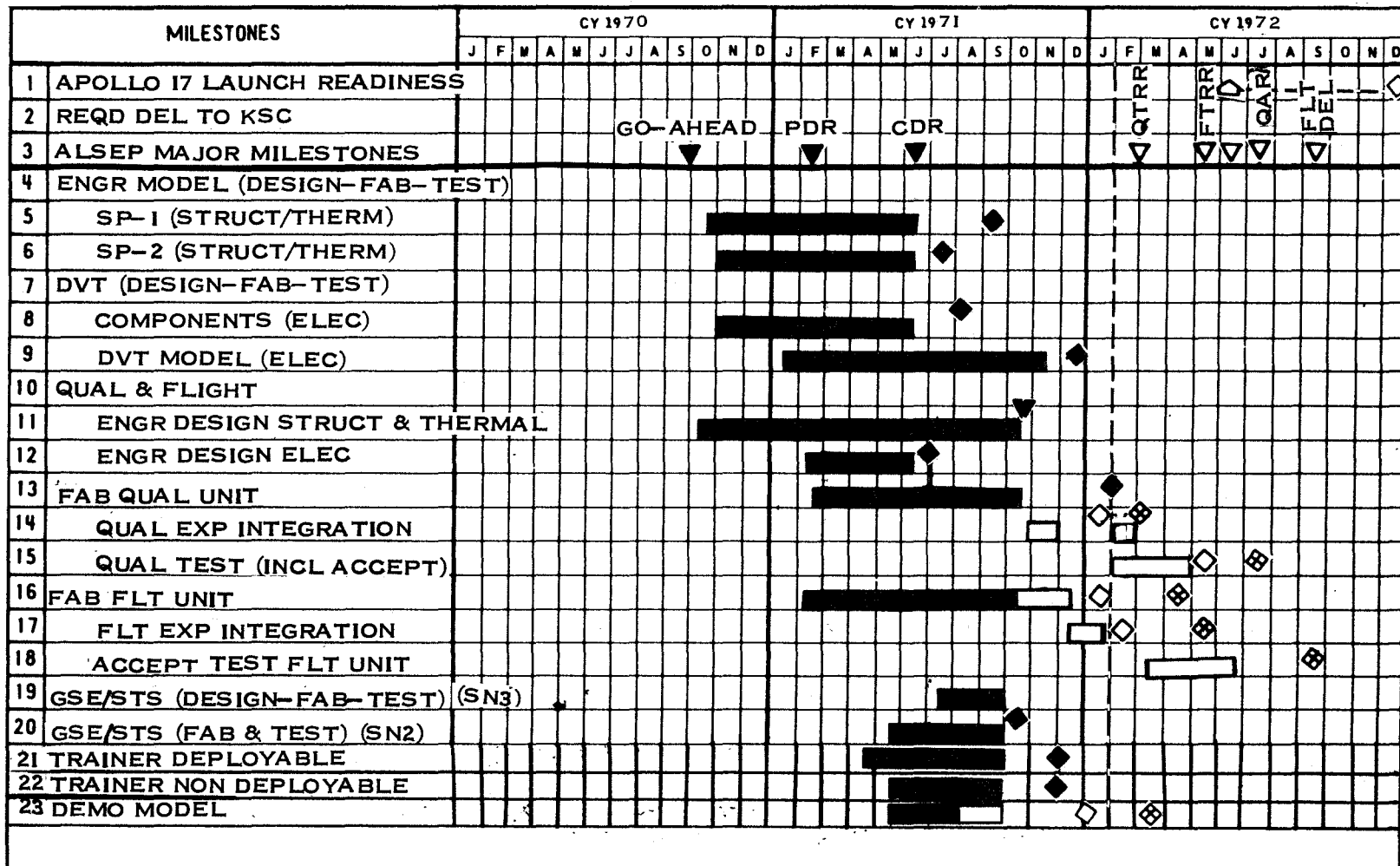
MSC FORM 965D (JAN 68)

PK Gerke
P.D. GERKE MANAGER LSPO
STATUS RESPONDS
E.L. Tribble
E.L. TRIBBLE PROJECT OFFICER
SCHEDULE RESPONDS.

MSC FORM 9850 (JAN 68)

APOLLO 17 ALSEP

John H. Langford
 J. H. LANGFORD EXPERIM. MGR.
 STATUS RESPON.
E. Bob Stewart
 E. BOB STEWART PROJ. OFFICER
 SCHEDULE RESPON.



M.D. Holley
M.D. HOLLEY EXPERIM. MAN.
STATUS REASON:

M.D. HOLLEY EXPERIM. MAN
STATUS RESENG.

R. J. Bartosh
R. J. BARTOSH PROJ. OFFICER
SCHEDULE RESPNS.



LUNAR EJECTA AND METEOROID

J. B. THOMAS EXPERIM MGR
STATUS RESPONSIBILITY

E. Bob Stewart

E. BOB STEWART PROJ OFFICER
SCHEDULE RESPONSIBILITY

[illegible]

2-1-72

E. L. Weeks

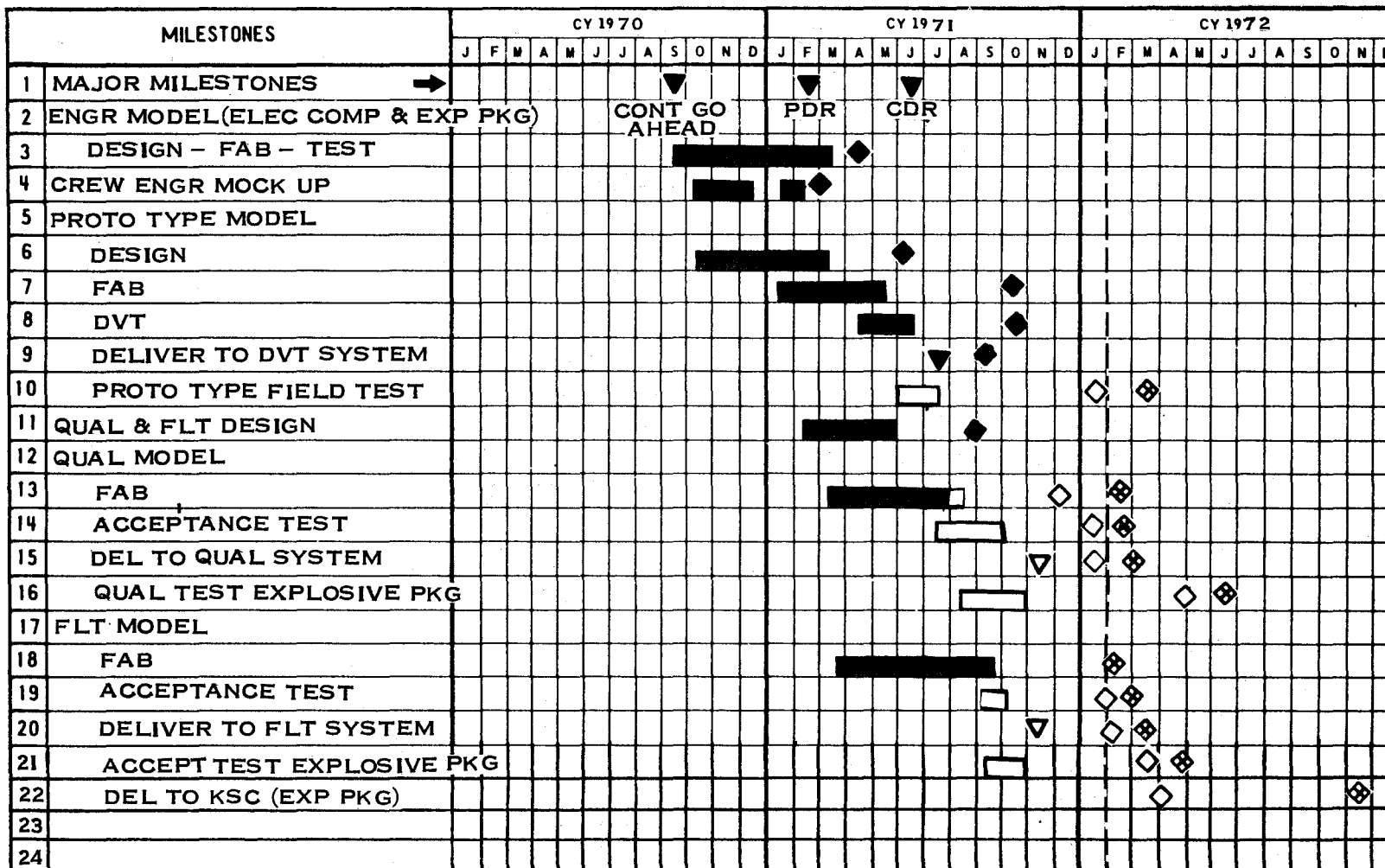
E. WEEKS EXPERIMENT MGR
STATUS RESPONSIBILITY

E. Bob Stewart

E. BOB STEWART PROJ OFFICER
SCHEDULE RESPONSIBILITY

S-203

LUNAR SEISMIC PROFILING EXPERIMENT



R. J. Bartosh
R. J. BARTOSH PROJ. OFFICER
SCHEDULE RESPNS.

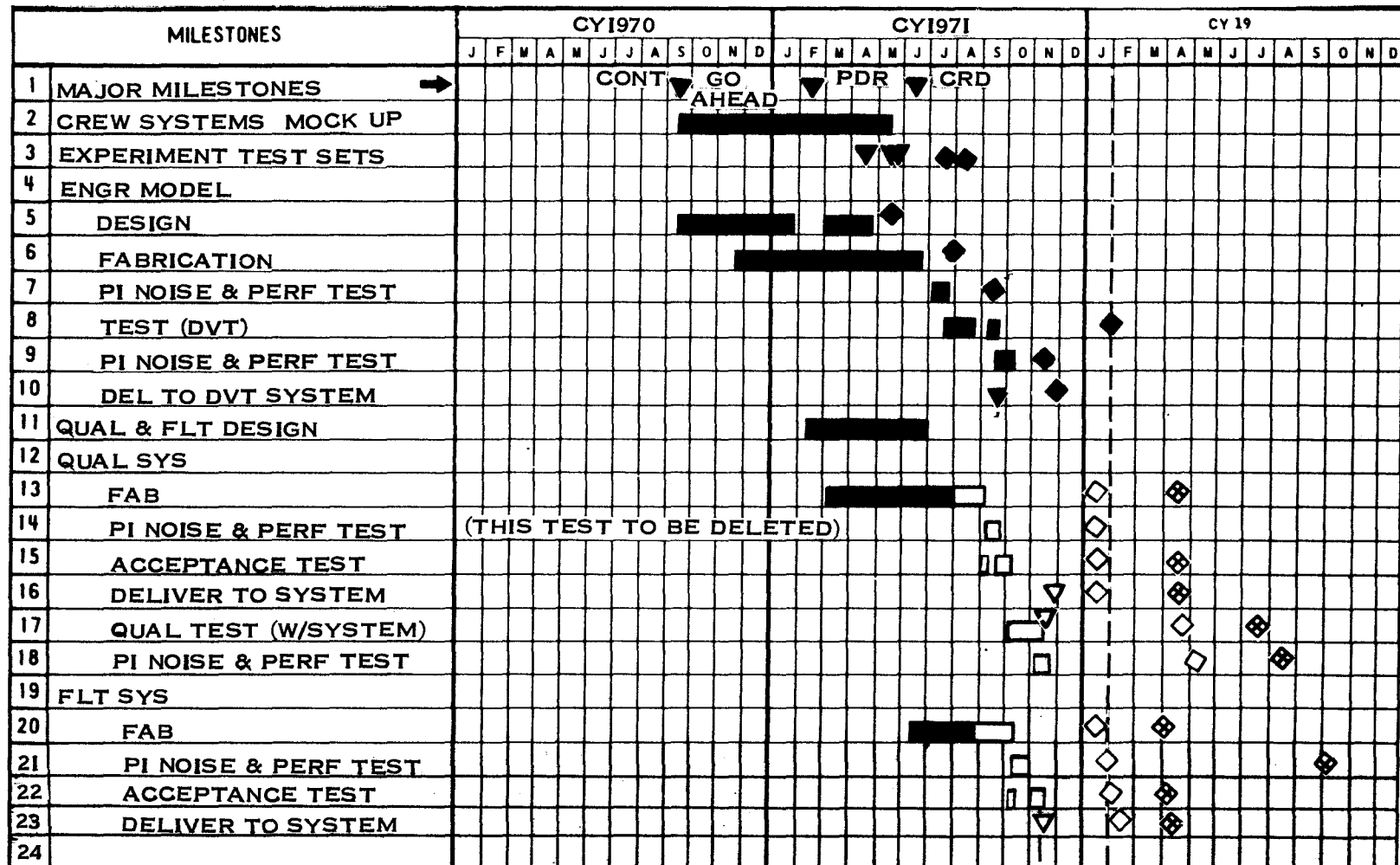


S-207
LUNAR SURFACE GRAVIMETER

A. CARRAWAY EXPERIMENT MGR
STATUS RESPONSIBILITY

E. Bob Stewart
E. BOB STEWART PROJ OFFICER
SCHEDULE RESPONSIBILITY

HARDWARE SCHEDULE



RADIOISOTOPE THERMOELECTRIC GENERATOR

RTG

APOLLO 17

CONTRACTOR: AEC T-92977

James A. Briley 11/16/71
J. BRILEY S/S MANAGER

Lynn A. York
LYNN A. YORK PROJ. OFFICER
SCHEDULE RESPONS.

MILESTONES		CY 1970												CY 1971												CY 1972																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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**C. APOLLO 16, 17 PRINCIPAL
INVESTIGATOR STATUS**

W. EICHELMAN

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PI ACTIVITIES AND STATUS

SURFACE EXPERIMENTS

<u>EXPERIMENT</u>	<u>PI</u>	<u>ORGANIZATION</u>	<u>MISSIONS</u>	<u>CONTRACT NUMBER</u>	<u>CONTRACT PERIOD</u>	<u>REMARKS</u>
S031 PSE	DR. G. LATHAM	COLUMBIA U	11 - 16	NAS9-5957	4-73	CONDUCTING ANALYSIS OF 12, 14, AND 15 DATA.
	DR. F. PRESS	MIT (CO I)	11 - 16	NAS9-11540	4-73	
S033 ASE	DR. R. KOVACH	STANFORD U	14, 16	NAS9-5632	8-73	ESTABLISHED LSPE CHARGE DEPLOYMENT AND EVALUAT- ING ASE SEISMIC EVENTS
S203 LSPE	DR. R. KOVACH	STANFORD U	17	NAS9-5632	8-73	
S034 LSM	DR. P. DYAL	AMES	12, 15, AND 16	AMES	7-72	PROVIDED ADDITIONAL FUNDING TO AMES FOR PROCESSING
S198 LPM	DR. P. DYAL	AMES	14, 16	AMES	7-72	CONDUCTING APOLLO 16 TRAVERSE PLANNING
S035 SWS	DR. C. SNYDER	JPL	12, 15	JPL	2-72	EVALUATING THE APOLLO 12 AND 15 DATA

PI ACTIVITIES AND STATUS
SURFACE EXPERIMENTS (CONT)

<u>EXPERIMENT</u>	<u>PI</u>	<u>ORGANIZATION</u>	<u>MISSIONS</u>	<u>CONTRACT NUMBER</u>	<u>CONTRACT PERIOD</u>	<u>REMARKS</u>
S036 SIDE	DR. J. FREEMAN	RICE U	12, 14, AND 15	NAS9-5911	10-72	EVALUATING DATA
S037 HFE	DR. M. LANGSETH	COLUMBIA U	13, 15, 16, AND 17	NAS9-6037	8-73	EVALUATING HEAT FLOW AND CONDUCTIVITY DATA. SUPPORTING DRILL DESIGN CHANGES
S038 CPLEE	DR. O'BRIEN DR. D. REASONER	RICE U	13, 14	NAS9-5884	2-72	CONTRACT NEGOTIATION FOR EXTENSION THROUGH 3-73
S058 CCGE	DR. F. JOHNSTON	U OF T	12, 13 14, AND 15	NAS9-5964	12-71	
S059 LGE	DR. G. SWANN DR. W. MUEHLBERGER	USGS U OF T	11 - 17	USGS	6-72	MODIFIED TASKS
S078 LRRR	DR. FALLER	WESLEYAN U	14 AND 15	NAS-11025	7-72	PREPARING FINAL CONTRACT REPORT
S080 SWC	DR. J. GEISS	BERNE U	11, 15, and 16	N/A	N/A	

PI ACTIVITIES AND STATUS
SURFACE EXPERIMENTS (CONT)

<u>EXPERIMENT</u>	<u>PI</u>	<u>ORGANIZATION</u>	<u>MISSIONS</u>	<u>CONTRACT NUMBER</u>	<u>CONTRACT PERIOD</u>	<u>REMARKS</u>
S152 COSMIC RAY	DR. R. FLEISCHER	G. G.E.	16	NAS9-11468	2-73	ESTABLISHING REAL TIME PROCEDURES
S199 LTG	DR. M. TALWANI	COLUMBIA U	17	NAS9-11751	7-73	PREPARING MISSION REQUIRE- MENT AND HARDWARE DEVELOP- MENT SUPPORT. SUBCONTRACT TO STANFORD COMPLETE, DR. WING PENDING
S200 SOIL MECH	DR. J. MITCHELL	U OF C BERKELEY	14 - 17	NAS9-11266	12-73	PREPARING APOLLO 16 REQUIRE- MENTS CONDUCTING ANALYSIS OF APOLLO 15 DATA
S201 FAR UV CAMERA	DR. G. CARRUTHERS	NRL	16	T-91855	2-73	MSC DATA PROCESSING MAY NOT BE FEASIBLE AND REQUIRES SUBCONTRACTING
S202 EJECTA METEOROID	O. BERG	GSFC	17	ICA	7-73	ESTABLISHED FILM ACCEPTANCE CRITERIA AND MISSION REQUIRE- MENTS. COMPLETED ENGINEERING MODEL CALIBRATION
S204 SEP	DR. G. SIMMONS	MIT	17	NAS9-10748	7-73	EVALUATING GLACIER TEST DATA
S205 LUNAR ATMOSPHERE COMPOSITION	DR. J. HOFFMAN	U OF T DALLAS	17	NAS9-12074	1-74	PREPARING MISSION REQUIREMENTS ESTABLISHING CALIBRATION PRO- CEDURES AND DATA ANALYSIS TECHNIQUES

PI ACTIVITIES AND STATUS
SURFACE EXPERIMENTS (CONT)

<u>EXPERIMENT</u>	<u>PI</u>	<u>ORGANIZATION</u>	<u>MISSIONS</u>	<u>CONTRACT NUMBER</u>	<u>CONTRACT PERIOD</u>	<u>REMARKS</u>
S032 TIDAL GRAVIMETER	DR. J. WEBER	MARYLAND U	17	NAS9-5886	1-74	ESTABLISHED REAL TIME DATA AND DISPLAY REQUIREMENTS SUPPORTING HARDWARE DEVELOPMENT
NEUTRON FLUX	DR. D. BURNETT	CAL TECH	PENDING			PREPARED SOW AND CCBD. RFP FORWARDED TO CAL TECH

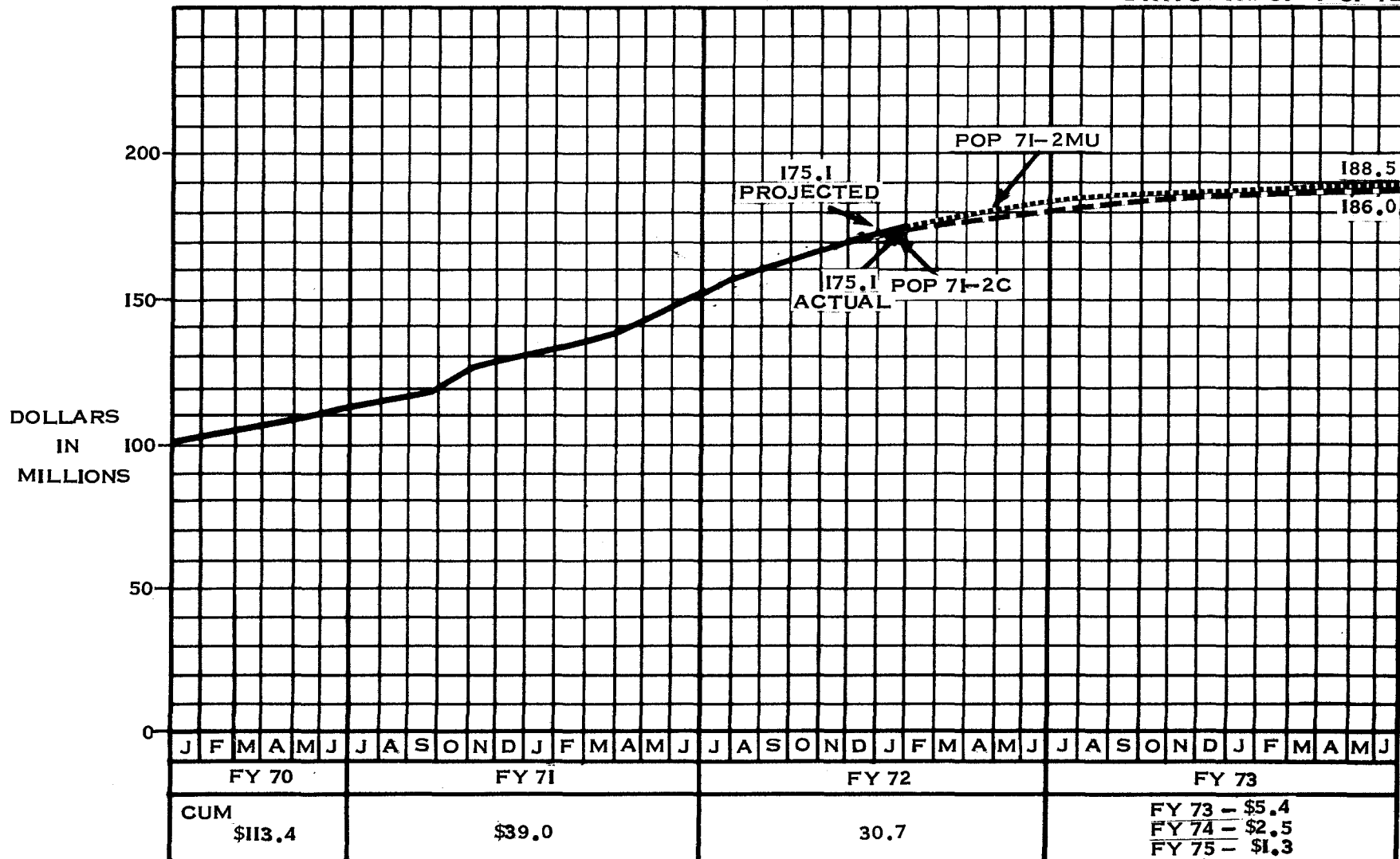
D. PROGRAM COST STATUS

E. TRIBBLE

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LUNAR SURFACE EXPERIMENTS CUMULATIVE COSTS

STATUS AS OF 1-31-72



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E. WEIGHT SUMMARY

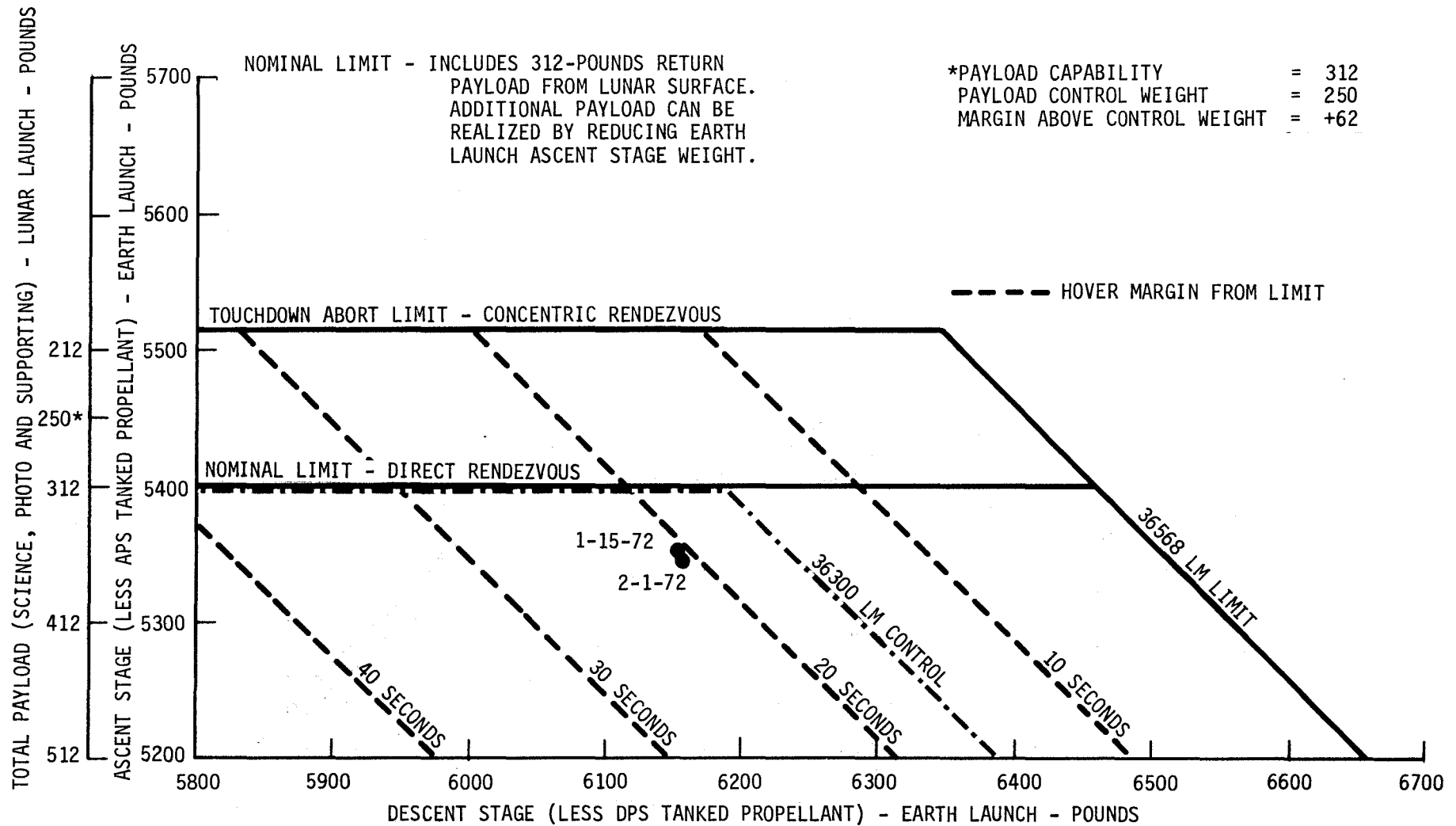
R. MORTON

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LM-11

J MISSION PERFORMANCE

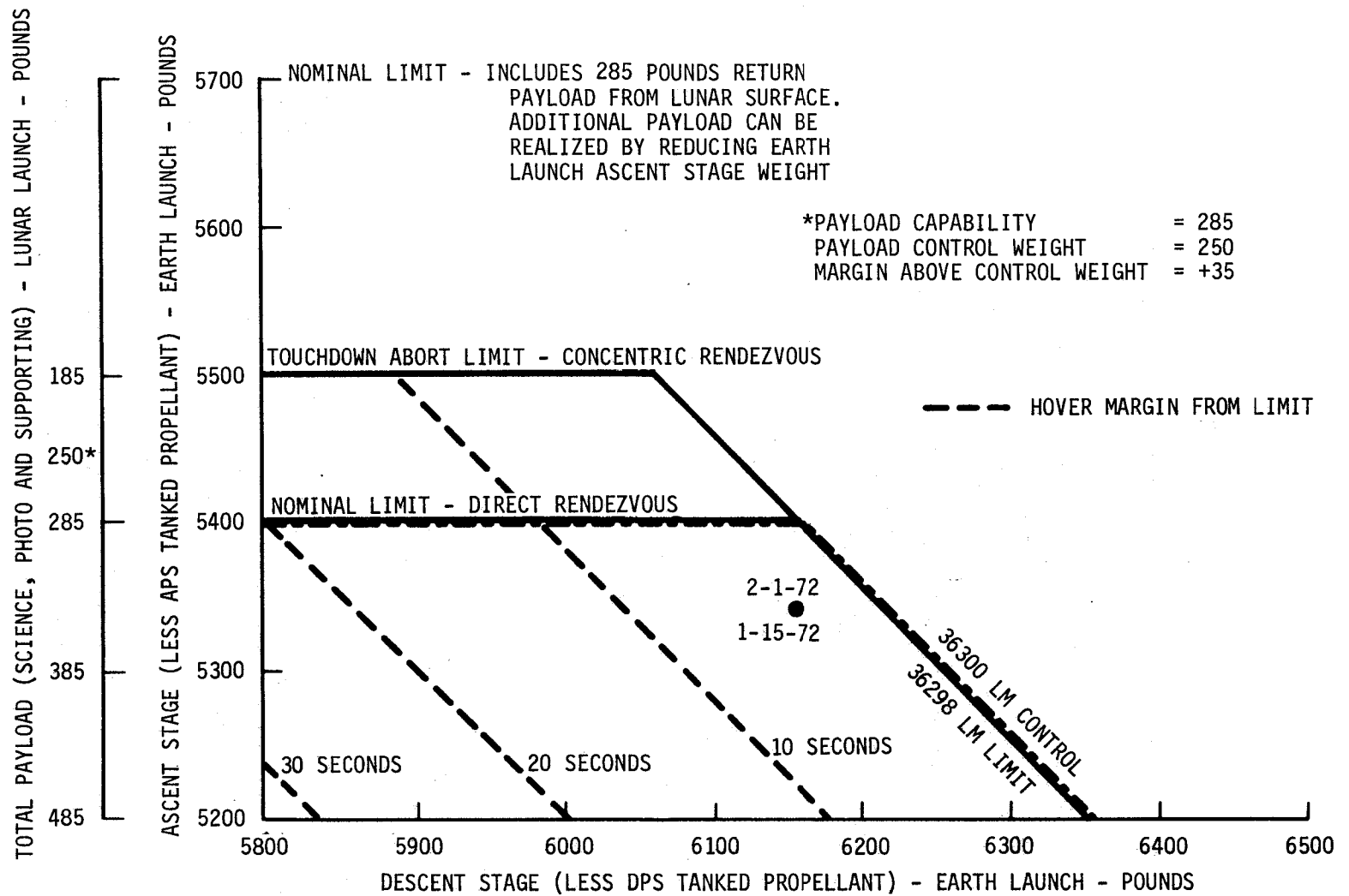
APOLLO 16.



LM-12

J MISSION PERFORMANCE

APOLLO 17



LM PAYLOAD SUMMARY CURRENT WEIGHT STATUS

FEBRUARY 1, 1972

<u>ITEM DESCRIPTION</u>	<u>MISSION LM</u>	<u>PN QEO TNT YDE</u>	<u>J-2 11</u>	<u>PN QEO TNT YDE</u>	<u>J-3 12</u>
ASCENT STAGE					
SCIENCE EQUIPMENT PAYLOAD			1.1		0.5
PHOTOGRAPHIC EQUIPMENT PAYLOAD			17.8		9.8
SUPPORTING EQUIPMENT PAYLOAD			18.6		14.8
DESCENT STAGE					
SCIENCE EQUIPMENT PAYLOAD			495.4		494.4
FUEL CASK ASSEMBLY MOUNTING			54.4		54.3
PALLET ASSEMBLY			149.5		142.7
S-031, PASSIVE SEISMIC EXPERIMENT			22.4	(1)	0.0
S-033, ACTIVE SEISMIC EXPERIMENT			27.4		0.0
S-034, LS MAGNETOMETER			21.3		0.0
S-203, LUNAR SEISMIC PROFILING			0.0		55.5
S-205, MASS SPECTROMETER			0.0		20.0
S-207, LUNAR SURFACE GRAVIMETER			0.0	(1)	28.5
S-037, HEAT FLOW EXPERIMENT			41.1		41.6
S-202, LUNAR EJECTA AND METEOROID			0.0		15.7
S-059			93.9		72.4
S-080, SWC EXPERIMENT			1.2		0.0
S-152, COSMIC RAY DETECTOR			14.7		0.0
S-198, MAGNETOMETER, PORTABLE			9.8		0.0
S-201, FAR UV CAM/SPECTROSCOPE			54.3		0.0
S-204, TRANSMITTER, SEP			0.0		35.2

(1) S-031 OR S-207 WILL BE CARRIED. FOR WEIGHT REPORT S-207 IS USED.

LM PAYLOAD SUMMARY

CURRENT WEIGHT STATUS (CONT)

FEBRUARY 1, 1972

<u>ITEM DESCRIPTION</u>	<u>MISSION LM</u>	<u>PN QEO TNT YDE</u>	<u>J-2 11</u>	<u>PN QEO TNT YDE</u>	<u>J-3 12</u>
DESCENT STAGE					
S-199, GRAVIMETER, TRAVERSE			0.0		28.5
S-200, PENETROMETER, RECORDING			6.0		0.0
PHOTOGRAPHIC EQUIPMENT PAYLOAD			15.0		15.0
SUPPORTING EQUIPMENT PAYLOAD			166.3		163.0
LUNAR ROVING VEHICLE			516.7		514.5
CURRENT STATUS			1230.9		1212.0
CONTROL WEIGHT			1200.0		1200.0
MARGIN			-30.9		-12.0

F. PREVIOUS ACTION ITEMS

D. LOCKARD

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PREVIOUS ACTION ITEMS

● LUNAR SURFACE EXPERIMENTS

- ACTION: CD12/G. FRANKLIN
 - INSURE THAT CREW TRAINING FOR THE UV CAMERA INCLUDES FULLY SUITED OPERATIONS AND SIMULATED LUNAR LIGHTING CONDITIONS FOR ALINEMENT
- ACTION: CD12/G. FRANKLIN
 - INSURE THAT FIT CHECKS (ASSEMBLY, DISASSEMBLY, INTERIM STORAGE, ETC.) OF FLIGHT CONFIGURED LUNAR SURFACE TRAINING HARDWARE ARE ACCOMPLISHED WITH SUITED CREW. INFORM PG/J. GOREE OF ANY DEVIATIONS TO THIS REQUIREMENT
- ACTION: EH/D. WISEMAN
 - INSURE THAT AN ANALYSIS IS PERFORMED TO DETERMINE IF ANY PROBLEM EXISTS WITH DIFFERENTIAL THERMAL EXPANSION OF THE LUNAR SURFACE DRILL AND ASSOCIATED HARDWARE